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NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 32

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WORLDWIDE REPORT

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CASTRO MADERO DISCUSSES INDIAN, BRAZILIAN ACCORDS

Buenos Aires CONFIRMADO in Spanish 4 Jan 80 pp 6-7

[Interview with Vice Adm Carlos Castro Madero, date and place not given]

[Text] The year recently begun will bring profound changes in the spectrum of international nuclear politics. It is very probable that the pressures which the great powers exert over the other countries, in the matter of safeguards, will increase. In any case, with the signing of the contract with the Swiss firm Zulzor Brothers, Argentina will achieve control over the complete fuel cycle, using natural uranium and heavy water. In that manner, its technological independence will be practically total and it will advance toward a second step, which will be that of developing negotiations with the developing nations, with the aim of filling the void which is provoked by the large suppliers who alone transfer technology under rigorous conditions.

After participating in the meeting of the International Atomic Energy Agency, held in New Delhi, India, the brilliant Vice Adm Carlos Castro Madero, talked with CONFIRMADO about the most problematic subjects in the nuclear field. So, during a Creole barbecue, served at the CNEA [National Atomic Energy Commission] center in Ezeiza, the president of the organization explained succinctly his position concerning a possible agreement with Brazil, progress in the construction of the Rio Tercero Embalse power station and the possibility of Argentina's joining the London Club.

CONFIRMADO: A few days ago, a rumor started in Buenos Aires to the effect that the possibility of asking the Germans to complete the Rio Tercero Embalse power plant, because of alleged inefficiency on the part of the Canadian company in charge of the project, is being considered.

Carlos Castro Madero: No, not at all. There is a commitment from the Canadian company to complete the project under its control and management. So, I deny these rumors.

[Question] But you were to take control personally of the project.

[Answer] Indeed, Rio Tercero required an increased incentive in all its activities, which led to a concerting of efforts throughout all the national suppliers and the engineering firms which are involved in the construction, so that this power station can be put into operation as soon as possible. The contractors have had their problems but they are on the verge of solving them.

[Question] How far behind is construction of the power plant now?

[Answer] The project was originally supposed to go into service in January 1980. This estimate was made in 1973, but between that year and 1976, the country went through a difficult period. To that situation were added the problems of the contractors, in particular those of the Canadian company in meeting the scheduled dates. So that now, we are optimistic that it can be put into operation between March and July 1982.

[Question] To those problems you mention should we add the renegotiation of the contract?

[Answer] The Canadian company has claimed that it faces higher costs than it had anticipated. Everything is under consideration and we intend to find the best solution, with our good attitude.

[Question] Could you give us a date for the completion of these negotiations?

[Answer] No, because we have been negotiating for almost a year and we have not been able to arrive at an agreement. It is an arduous and difficult task; the positions are somewhat far apart and I believe that these talks and the necessity of having the power station operational within the briefest time, will contribute to our finding a solution, at least an acceptable one to both sides.

[Question] Thanks to the development reached by the local nuclear industry during the last 10 years, there are those who affirm that it would not be out of the question to think of the admission of Argentina into the London Club, within a short time.

[Answer] The London Club groups the countries which export nuclear technology. In fact, Argentina would have the right to be a member of this organization since we have exported a reactor to Peru. But to be a member of the Club, certain safeguards and the ratification of treaties, which we are not willing to accept, are required. Moreover, everything depends on the Argentine desire to be, or not to be, a member of the Club.

[Question] A few days ago, a rumor started in Buenos Aires that Chile has the technology and the means to make its own atomic bomb. Do you believe this speculation possible?

[Answer] I think that it is an unfounded report, perhaps with political objectives, because all the Chilean efforts are devoted to peaceful purposes.

Furthermore, I do not believe that Chile possesses the necessary equipment to undertake an enterprise like that of building the bomb.

[Question] What contacts did you make during your recent trip to India for the International Atomic Energy Agency.

[Answer] At the IAEA, I was able to observe the permanent need of the developing countries for the organization to make a major effort in the area of technical assistance, regarding safeguards. We criticize the IAEA because it promotes a very inefficient system of safeguards, which causes it to use up a great part of its budget, to the detriment of the technological assistance which the developing countries need.

[Question] And what conclusions did you draw from your conversations with India's atomic experts?

[Answer] They are very advanced and interested in Argentina ratifying the cooperation agreement which we have with India, which will be extremely important, since neither of our countries is a signatory of the Nonproliferation Agreement. Moreover, we have difficulties in obtaining technology from other nations.

[Question] Could the possibility of an agreement with Brazil cause a change in the policy Brazilia is developing in nuclear matters, on the basis of enriched uranium, with the support of German technology?

[Answer] Personally, I believe that it will not, because Brazil has chosen a road which is convenient and on which it has embarked.

[Question] Is it not possible to follow the two roads: that of natural uranium and that of enriched uranium?

[Answer] It is possible, but it would mean a great dispersion of efforts, economic as well as human. Moreover, I think that our agreement with Brazil will in no way effect the discussions which that country took in its own time.

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FURTHER NUCLEAR DEVELOPMENT POSSIBILITIES DISCUSSED

Bratislava PRACA in Slovak 23 Jan 80 p 5

[Article by Ivan Spani: "Philosophy of Maximum Safety"]

[Text] The construction of our first nuclear power plant A-1 began at Jaslovske Bohunice, Trnava okres in 1958. This was a power plant with the deuterium-cooled reactor with the output of 150 MW whose principal purpose was to verify on an industrial scale the possibility of obtaining energy from natural uranium. In the 1970's, however -- as pointed out by Engr Jozef Skrabal, CSc, of the Czechoslovak Commission for Nuclear Energy (CSKAE) -- "the original rational conception aimed at the development of the entire Czechoslovak nuclear power sector found itself in conflict with the actual goal of producing energy." Moreover, as the journalists learned from CSKAE chairman Engr Jan Neumann recently, this power plant is not operative because of technical breakdowns and condition of equipment and its start up operations are not anticipated at the present time.

According to the 1970 agreement with the USSR, we adopted the concept of nuclear power plants based on the light water type reactor VVER which uses not natural, but slightly enriched uranium. This switch resulted in many advantages. The first 440 MW block of nculear power plant V-1 at Jasslovske Bohunice has been successfully operating for more than a year, while the second block with the same output is about to be put into operation.

The disadvantage of light water reactors, however, is that they use less than one percent of natural uranium for the transformation of energy. For this reason, all countries participating in the development of nuclear energy invest considerable funds in the development of so-called fast breeder reactors which can make much more intensive use (as much as 50-60 times higher) of natural uranium.

CSSR Among 10 Most Advanced Countries

Czechoslovak research and particularly our engineering and metallurgy have significantly contributed to the development of the first, second as well as third concept. As a result, we are among the 10 countries in the world today which can manufacture and deliver technological equipment for the nuclear power plants. Apart from the USSR, Czechoslovakia is the only CEMA country which has this capability.

Our early participation in the nuclear program has profoundly affected the development of Czechoslovak engineering. In cooperation with the Soviet experts, we have already developed for A-1 nuclear power plant unique production technologies, unique reactor vessels, special high strength carbon steel, special welding procedures. We manufactured armature piping as well as cell-type steam generators (parne generatory clankoveho typu) of the original Czechoslovak design.

Approximately 30 of our metallurgical and engineering enterprises, plants and institutes participated in these efforts. Due to the successful solution of engineering and metallurgical problems, our industry was entrusted, within the international integration measures of CEMA countries, with the manufacture of most of the basic parts of the primary circuit of VVER 440 -- pressure vessel and internal parts of the reactor, control mechanisms, steam generator, volume compensator, primary piping and armatures as well as steam separator. Not only that. We are also getting ready to manufacture the blocks and some components for the power plants with a much bigger -- 1000 MW -- output and power plants with fast breeder reactors.

Most Crucial Equipment

Statistics reveal that the steam generators are the most crucial elements in a nuclear power plant. They transmit heat from the primary circuit to the secondary circuit and produce steam for driving the turbogenerators. They must be absolutely leakproof so that no radioactive water penetrates from the primary circuit into secondary steam.

Even stricter requirements must be met by the steam generators designed for the power plants with the deuterium-cooled reactors (to prevent gas coolant from escaping) and the highest quality specifications are stipulated for steam generators for the nuclear power plants with the fast breeder reactors where contact of sodium coolant with water or water steam must be prevented. We know from experiments in school what might happen...

The steam generator for A-1 was developed by the Brno Research Institute for Power Engineering Plants (VUZES) and manufactured by the K. Gottwald First Engineering Plant in Brno. This is an original Czechoslovak design. In contrast to solid [telesovy] steam generators predominant in the world, this cell-type steam generator makes it possible in case of failure to rapidly locate the cause of trouble and replace only one leaky cell among the multitude of elements without having to shut down the entire block. This is important particularly in the power plants with the fast breeder reactors which use molten sodium as coolant. Even in case of a breakdown only a minimum quantity of sodium comes into contact with water which would not be possible in solid steam generators.

"Our design is based on the philosophy of maximum safety and long-term reliability and service life," says Engr Valdimir Krizek, CSc, head of the VUZES department for nuclear technology. "Sodium is not in contact with any weld, our design prevents accidents."

Last November our steam generator was practice tested. It has been operating reliably and without breakdowns in the Soviet nuclear power plant with a fast breeder reactor in Dimitrovgrad since 1973. They experimentally injected 12 kg of water steam into sodium and no accident occurred. Signal instruments proved themselves, compounds of the reaction could be easily and completely removed, and steam generator is about to be put into operation again.

Whom Will Practice Prove Right?

The Czechoslovak engineering industry, however, has not focused its attention exclusively on the cell-type steam generators. Both Vitkivice and Tlmace plants are getting ready to manufacture steam generators for future fast breeder reactors power plants. The workers in the Vitkovice engineering plants have assigned priority not to the cell-type steam generator, but to the solid steam generator which proved itself in the VVER power plant. It was supplied by the USSR for the V-1 plant, the Vitkovice plants will manufacture it for the V-2 plant. "It is our most demanding final product in the area of nuclear engineering," Engr Jiri Elfmark, DrSc, head of research of nuclear equipment at Vitkovice told us. "We advocate this design also for the power plants with the fast breeder reactors because we regard it as sufficiently reliable. In addition, the cell-type steam generators have higher operating costs because they take more room and are 50 percent more expensive."

According to CSKAE chairman Engr Jan Neumann, it is still impossible to say which of the two designs should be given preference. Czechoslovakia must prepare both designs for production. Their advantages must be compared and their practical reliability must be tested.

The steam generator which is being manufactured by the Vitkovice plants and which will be used not only in the 440 MW, but also in 1000 MW blocks now under development is a thick-wall pressure vessel 12 meters long weighing 178 tons with 5,623 welded tubes. Several problems had to be solved: very precise drilling of the identical number of openings, welding on and sealing of tubes. They will be sealed by an explosion. A more than 20 meters deep pit is being dug out for this purpose in which more than 11,000 cap primers will be detonated. Not all of them at the same time. They will be detonated and tubes sealed in 50-piece lots.

Prestige of Vitkovice As Well As of Czechoslovakia

The preparations are already in full swing for the manufacture of steam generators and volume compensators for the nuclear power plants with 1000 MW blocks. Priority has been assigned, however, to 440 MW power plants of the VVER type. As a specialized manufacturer among the CEMA countries (supplying also Hungary and the GDR), Czechoslovakia plans to produce, according to the

Soviet design, 23 complete power plants of this type by 1983. Twelve of them are designed for our country and 11 will be exported. Vitkovice will play a key role in these efforts.

"The nuclear program is a matter of personal honor for our technicians and workers and a matter of Vitkovice's prestige." This is what we hear in this mammoth enterprise. It specializes in the manufacture and particularly export of huge industrial heavy-duty equipment. Equipment for the nuclear power plants will begin shortly to occupy an increasingly important place in their manufacture. After all, a steam generator represents a value production costs, of Kcs 47 million, a volume compensator Kcs 27 million. A loss of such products or its completion behind schedule means a great deal economically even for such a colossus as the Vitkovice plants are.

Nuclear engineering has already began to play a major role in this enterprise. It manufactured equipment for the nuclear power plants of the VVER 440 type in the value of more than Kcs 102 million in 1977, for Kcs 135 million in 1978, for 218 million last year and this year's plan calls for the manufacture of equipment in the value of Kcs 300 million. The annual manufacture of nuclear engineering equipment by Vitkovice is expected to reach Kcs 700-800 million during the Seventh Five-Year Plan.

It is also clear, however, from the above how important it is for an enterprise, to successfully manufacture and supply such a product as steam generator. It does not really matter, whether the ultimate decision will be made in favor of the Brno or Vitkovice design. The important point is that steam generators "Made in Czechoslovakia" meet with favorable acceptance. We have already reached this goal.

This called for mastering new technological procedures in rolling and forging, thermal processing, welding and assembly. We have developed new types of materials. We had to comply with particularly strict terms (the Soviet norms according to which we work are even stricter than the criteria of Western firms) and quality requirements specified for individual operations, and carry out checks which in some instances are more expensive than the actual production costs. For this reason, it is often said that Czechoslovak engineering has benefited from new nuclear engineering primarily by the fact that we have learned how to achieve the high standard, high quality and precision in manufacturing one of the most demanding products of the present time. This must be necessarily reflected also in other engineering sectors.

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ARGENTINE OFFICIAL DISCUSSES NUCLEAR AGREEMENT WITH BRAZIL

Madero Speaks in Brasilia

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 29 Jan 80 p 5

[Text] The president of the Argentine National Atomic Energy Commission [CNEA], Vice Admiral Castro Madero, yesterday admitted in Brasilia that there are broad possibilities for the signing of a nuclear accord between his country and Brazil. According to him, the two countries have programs which should develop in the same direction and for that reason cooperation would be beneficial for both. Moreover, Madero suggested the agreement would put an end to the arguments of rich countries, which refuse technical help, arguing there is the possibility of an arms race due to the rivalry between the two countries.

To Castro Madero the nuclear programs of Brazil and Argentina are for peaceful purposes: "Our governments have declared themselves against nuclear proliferation and the spread of nuclear weapons several times. Neither of the two nations signed the Nuclear Nonproliferation Treaty because it is discriminatory, treating the countries which have the bomb and those that do not have it in an unequal manner."

He believes that even before a nuclear agreement is signed, cooperation between Brazil and Argentina already exists: "As much as possible, it is taking place through the nuclear energy commissions. In the trip President Figueiredo will make to Buenos Aires, special attention should be devoted to nuclear cooperation because it is a subject of special interests to both sides."

Castro Madero also asserted that his visit to Brazil has the objective of establishing "which areas are the ones in which an effective cooperation can be established. I think there are many areas because the nuclear field covers a large number of branches such as physics, chemistry and biology."

Brazil and Argentina have differences in their nuclear programs, he said: "Brazil has to enrich uranium, we do not. However, the fuel cycle continues after that with the fabrication of fuel elements and other products. That technology is being developed with different degrees of progress between the two and with exchanges, there should be a speedup in work plans."

Another important example, according to Madero, is self-sufficiency: "The two countries are taking on the responsibility of building nuclear powerplants. That is very important because both will be able to benefit from the experience obtained by the companies in the execution of large projects such as is the case of the nuclear powerplants."

Prospects for the future, declared the president of the Argentine CNEA, are even more optimistic: "After the two nations learn reactor technology, what will be the next step? Will it be the breeder reactor, thorium reactor or fusion reactor? In that way it will be possible to have a growing exchange to make possible the acquisition of always scarce human and economic resources." A nuclear alliance between Brazil and Argentina, in the opinion of Castro Madero, will have another great advantage: "It will mean the end of the arguments by industrialized countries, which deny us technical assistance, arguing that there is an arms race. They argue that such an arms race, caused by rivalry, could place world peace in danger. After the agreement they would lose that argument."

Madero denied that he brought an outline of the agreement to be signed with Brazil during the visit President Figueiredo wihl make to Buenos Aires: "We are studying the possibilities; the agreement is of standard type like those that have been made with other Latin American countries."

The CNEA president said the possibilities of Brazil manufacturing heavy components for the Atucha II Powerplant were not studied: "Brazilian participation could be of interest, but Argentine industrial development must always be taken into consideration."

Further Statements at Itaguai

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 30 Jan 80 p 5

[Text] The president of the Argentine National Atomic Energy Commission [CNEA], Vice Adm Carlos Castro Madero, declared yesterday during a visit to the NUCLEBRAS [Brazilian Nuclear Corporations] equipment plant in Itaguai, that basic objective of the nuclear cooperation agreement with Brazil is the integration of all Latin America.

Madero asserted that cooperation in nuclear terms is very difficult in the international field due to the restrictions imposed by developed countries. That is why it is natural that developing nations should join efforts to compensate for the lack of cooperation by industrialized countries. According to Castro Madero, the great powers have a negative reaction to nuclear cooperation agreements because they do not want to lose their dominion of the market and they dictate the rules for the transfer of technology, since they are the only ones who have it.

However, the CNEA president explained that Brazil and Argentina are not going to practice a joint action in terms of nuclear energy programs. The objectiveis that of strengthening each country for other individual actions. In that respect, Madero as well as the president of NUCLEBRAS, Paulo Nogueira Batista, approve of cooperation agreements of the other Latin American countries and the development of their projects.

However, Castro Madero acknowledged that the Argentine nuclear policy of self-sufficiency in nuclear terms, having the knowledge of the entire fuel cycle and engineering and reactor operation, is still far from being attained, although that is the direction toward which CNEA activities are oriented. To achieve self-sufficiency, the president of the CNEA believes it is necessary to increase the participation of Argentine industry and nuclear engineering so as to obtain know-how.

After visiting the NUCLEP [NUCLEBRAS Heavy Equipment, Inc.] plants, Castro Madero went on to the project site of the nuclear powerplants at Angra dos Reis. Today he will meet with the president of the National Nuclear Energy Commission [CNEN], Hervasio de Carvalho, at which time new details of the agreement will be discussed, thus ending his agenda in Rio de Janeiro.

Argentine Equipment Purchases Doubtful

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 31 Jan 80 p 5

[Text] The president of the CNEA of Argentina, Vice Adm Castro Madero, ending his official visit to Brazil yesterday, said it is too early to know whether orders for heavy equipment will be made from Brazil or Germany. That will only be decided during the visit by the presidents of NUCLEBRAS, CNEN and FURNAS [Powerplants] to Argentina in the second half of March, when other aspects of the cooperation agreement will be discussed.

Madero declared that it is possible that equipment would be imported during the implantation phase of the Argentine nuclear industry until the Argentine industry is capable of providing for the entire program. The reprocessing plant being built on an experimental scale with a capacity for reprocessing 20 kilos of fuel element daily, has a completely national technology because there were foreign pressures which prevented an international agreement.

Castro Madero indirectly criticized the Brazil-German agreement when he advocated the transfer of nuclear technology among Latin American countries as the best way for development in this area, since developed countries impose thier technology, which is accepted because of the lack of experience of the purchasing country. Moreover, he said, there is the moral obligation among Latin American countries to help each other.

Castro Madero believes the structure of the Argentine nuclear program to be very efficient. The CNEA, with the support of the universities and research institutions, concentrates it into a joint operation, thus eliminating what has been a problem in the entire world, the duplication of efforts. Not only the physicists but the great majortity of the professors and scientists of the country are working in the nuclear program, from the research phase to the operation of powerplants.

The president of the CNEA also said that Argentina is satisfied with the line of reactors adopted, there being no reason for changing it. When the government decided to build a second nuclear powerplant, a widespread discussion was held with ministries, research institutes and universities to see which was the best one to be adopted, with the natural uranium, heavy water reactor winning by a large majority.

With respect to the reduction of installations goals from 30,000 megawatts to 15,000 megawatts of nuclear power by 1977, and now down to 3,300 megawatts, Madero said that it is a matter of a world problem, it being more suitable to make the maximum use of hydroelectric resources and complement them with nuclear resources. Argentina intends to have five nuclear powerplants of 600 megawatts each and one 300-megawatt plant by 1997.

Argentina also intends to turn over some sectors of the nuclear program to private enterprise, such as the uranium concentrate plant, the fuel element and the heavy water plants, in addition to the construction of two nuclear powerplants. Among the possible areas of cooperation with Brazil, Argentina is interested in the administration of large projects, development of industrial architecture, implementation of safety, quality, maintenance and operational controls of nuclear powerplants and in the construction of fuel elements.

Itamaraty

Only as of today will Itamaraty begin to make a broad evaluation of the visit by Madero. However, the initial impression is that the visit fully achieved its purposes: allowed Madero to obtain a first-hand knowledge of Brazilian potential in the nuclear area, including his visit to Angra dos Reis and Pocos de Caldas, and to insure a broad exchange of ideas with Brazilian diplomats and technicians of the atomic sector.

Neither of the parties expected more than that from the visit. But it was important, particularly because it reaffirmed the political decision of Brazil and Argentina to sign an agreement of nuclear cooperation. The two sides suggest that it will only be signed when negotiations really mature. In this respect, the trip by President Joao Figueiredo to Buenos Aires in May will not be any type of deadline capable of hindering or hurrying the negotiators.

Nuclear Agreement Politically Inspired

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 1 Feb 80 p 3

[Editorial: "An Essentially Political Nuclear Agreement"]

[Text] The visit by Adm Castro Madero, president of the Argentine Nuclear Energy Commission, allowed the confirmation of the extreme caution with which the government of that friendly country is viewing the signing of a nuclear cooperation agreement with Brazil. For the Argentines, who are considerably ahead in that field, the agreement is of great political interest, but it also has some economic disadvantages. From the political point of view, Argentina wants to have the support of Brazil for its position of nuclear independence with respect to the countries of the "Atomic Club," especially now that it is under the pressure of the great nuclear powers because of the announced purchase of a heavy water plant, which will give it complete control of the uranium cycle for the execution of its program.

Economically, we have nothing to offer the Argentines other than the manufacture of reactor components by NUCLEP, whose factory in Itaguai is idle. What Brazil can obtain is only the Argentine promise to buy some components for the four nuclear powerplants it is going to install by the year 2000. And that is because Argentina does not have the technology we are in theory going to receive from the FRG. Unlike Brazil, it chose the natural uranium process, which does not need enrichment for the generation of electrical energy, and its reprocessing for the production of plutonium which can be used for war purposes. It can also dispense with our knowledge in the field of searching for uranium since its reserves are quite sufficient for the nuclear program under execution with some to spare. Therefore, cooperation between the two countries is difficult, since we are very far behind in that sector and we have chosen a completely different technology.

Brazil needs to find customers for its reactor plant and it sees in Argentina the only buyer possible. It is necessary to note, however, that Argentina is already asking for international bids for the installation of a plant identical to that of NUCLEP, because it intends to have complete autonomy in the nuclear sector. Moreover, Argentine industrialists, who up to now have been playing an important role in the execution of plan, unlike the situation in Brazil, do not want either dependence on foreign suppliers or the placing of large orders with the Brazilian enterprise, no matter how many agreements of industrial complementation may be signed. In that respect they have the support of an aggressive public opinion, which has not yet assimilated the terms of the Itaipu-Corpus agreement very well, terms it considers unfavorable for Argentina.

The nuclear cooperation agreement is important to both countries from a political point of view because it would represent a front of two nonalined countries in the defense of their independence and self-determination in the nuclear field. There is no great interest in either Brazil or Argentina in isolating each other in this phase of consolidation. This would weaken them in the confrontation with the countries which have nuclear technology and are members of the "Atomic Club." The conclusion that can be reached, therefore, is that any agreement between Brazil and Argentina will probably be restricted to the field of definitions of a common policy, postponing until the future a more profound understanding and the solution of problems which will surely come with the completion of projects that will transform Brazil as well as Argentina into potential producers of nuclear weapons.

Madero To Visit Brasilia

Rio de Janeiro O GLOBO in Portuguese 27 Jan 80 p 37

[Text] Brasilia (O GLOBO)--The bases for a nuclear agreement to be signed with Argentina during the visit by President Joao Figueiredo to Buenos Aires next May will begin to be defined tomorrow when the president of the Argentine Atomic Energy Commission--CNEA--Carlos Castro Madero arrives in Brazil for a 3-day visit. Castro Madero will be with Minister of Mines and Energy Cesar Cals tomorrow morning and he will be received during the lunch hour by Minister of Foreign Affairs Saraiva Guerreiro. On that same day, in the afternoon, he will go to Pocos de Caldas where he will visit the uranium mine installations. On Tuesday he will go to Rio to meet with the Paulo Nogueira Batista of NUCLEBRAS and Hervasio Batista of the CNEN and he will inspect the Angra dos Reis powerplant project.

Itamaraty is viewing the visit by Madero, who is coming on the invitation of the Brazilian government, as a first exploratory contact to appraise the possibilities of an understanding in the nuclear area. The diplomats who are following the matter, warn that the visit by Madero should not result in the signing of any preliminary agreement, because despite the intentions revealed by the governments of the two countries on the willingness to have an agreement in the nuclear field, there were no talks prior to the meeting with the president of the CNEA.

According to the diplomats, talks with Castro Madero will be held in a different way than the negotiations which recently led to the signing of a nuclear agreement with Iraq. In the latter case, the diplomats recall, the dialog was easy because Brazil had greater experience in the nuclear sector.

Although admitting that with the Argentines the negotiations will be on a higher level, the diplomats reacted to the statement that Argentina has reached a state in its nuclear program which is more advanced than the Brazilian: "The Argentines were only first in having a power reactor in operation."

Cooperation with the Argentines in the nuclear area should take place, according to Brazilian diplomats, on the basis of complementation because Brazil already is in a position to work with advanced techniques in the fields of powerplant installation safety and in the training of skilled personnel, among others.

There are also possibilities of uranium exports being negotiated, although it may not be considered an aspect of great importance, since the two countries are self-sufficient in uranium and the Argentine nuclear powerplant uses natural uranium and the Brazilian system uses enriched uranium.

CNEN Supports Nuclear Agreement

Rio de Janeiro O GLOBO in Portuguese 26 Jan 80 p 22

[Text] The president of the CNEN, Hervasio de Carvalho, said yesterday that a cooperation agreement between Brazil and Argentina in the nuclear field would be extremely important for both parties.

He said the two countries are equal in technological capability in that area, Argentina having the experience in operating powerplants, since it has had one in full operation for 4 years, and Brazil, on the other hand, is carrying out a program which has as an objective the assimilation of the technology for the complete fuel cycle.

"If an agreement were to be signed, there would have to be a complete protocolar process to define specific areas for cooperation. Today it would not be possible to define such areas nor to admit that either of the two countries is more advanced than the other in that field."

With Iraq

Referring to the nuclear agreement signed with Iraq, Hervasio de Carvalho suggested that it is still too early for there to be a definition of periods for the effective development of projects. "We cannot yet establish dates for anything with respect to that agreement."

Brazil should provide Iraq with technology having to do with uranium prospecting, studies for evaluation of reserves, transfer of nuclear engineering technology, in addition to reactors and slightly enriched natural uranium.

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SCIENTISTS TO PROPOSE NATIONAL NUCLEAR FUSION CENTER

Rio de Janeiro O GLOBO in Portuguese 21 Jan 80 p 13

[Text] Brazilian scientists who are studying nuclear fusion will shortly present a proposal to the government for the creation of a National Nuclear Fusion Center, as an independent agency aimed at stimulating research in that area.

The chief of the plasma group of the Physics Institute of the University of Campinas (UNICAMP), Prof Paulo Sakanaka told O GLOBO that although Brazil has begun research behind other countries, it can distinguish itself in the area of heating. At the present time, fusion requires temperatures in the order of 100 million degrees and one of the pieces of equipment at UNICAMP, completely designed in Brazil, has achieved a temperature of 10 million, compared to 60 million obtained thus far in the United States.

Physics Symposium

A participant in the Sixth Brazilian Symposium on Theoretical Physics being held at the Pontifical Catholic University (PUC), the Brazilian scientists declared that by the mid-eighties, the world will achieve the scientific feasibility of the fusion process and that the first fusion reactors will be in operation between 2000 and 2020.

"The prospect is that oil will be depleted within 20 years. Various alternatives are being studied: use of solar energy, use of electricity, and nuclear fission. But those alternatives will always leave a margin for energy dependence. Nuclear energy creates other problems, such as the protection of the environment and atomic waste. That brings up nuclear fusion technology, which can resolve the problem in a definitive manner.

Paulo Sakanaka recalls that the study of nuclear fusion began in 1945. When the first hydrogen bomb was exploded, the scientists observed the possibility of finding a new source of energy on the basis of deuterium associated with tritium, both isotopes of hydrogen.

The big difficulty that immediately presented itself was that of obtaining the high temperatures (100 million degrees Centigrade) capable of causing fusion. Up to 1958, the scientist said, almost nothing was achieved. That year, the countries most interested--among them the United States--held an international meeting to discuss the peaceful use of nuclear energy. A joint effort was agreed upon aimed at overcoming the obstacles. From that point onward, research increased throughout the world with significant theoretical progress.

Association

The professor explained that the raw material of nuclear fusion is water, from which deuterium and tritium are extracted. Formerly, research know-how centered on deuterium alone. But in order to achieve the fusion of that isotope, temperatures of 1 billion degrees were necessary. However, by associating deuterium with tritium, the scientists concluded that fusion could be brought about with a temperature of 100 million degrees.

Tritium is a radioactive element but its action is very far from that of atomic (nuclear fission) waste. While the waste from a conventional atomic plant has radioactivity that lasts 500 years, that from a future fusion plant would not last more than 24 hours. It is in precisely that amount of time that the action of tritium dissipates in the atmosphere. It can be said then that fusion does not leave atomic waste nor require large expenditures to protect the environment. In addition, fusion avoids any danger of an explosion.

Critical Points

Paulo Sakanaka says that the theoretical development of fusion requires overcoming two critical points: confinement and heating. Confinement is connected with the enclosure in which the deuterium and tritium, already transformed into plasma through ionization, will be held at high temperatures.

"But we are approaching the scientific feasibility of those two conditions. I believe that between 1982 and 1985, we will find the solution. After that, research will be directed toward detailing equipment engineering."

The scientist pointed out that research costs are very high, which makes necessary an internationalization of the projects. Few countries by themselves can aspire to build a reactor. For that reason, there are various associations among countries for the purpose of overcoming the challenge of fusion. The United States and Japan fall into this category. Europe is developing an international system; the same is occurring in Russia.

Heating

Paulo Sakanaka explains that at the present stage, research conceives a reactor that operates on the basis of pulsations. That is, when the temperature of 100 million degrees is reached, the plasma (ionized deuterium and tritium) releases energy. One second is enough for a great release of energy but, certainly, with the development of technology, the duration of time may be much greater. The world race is concentrated for the most part on achieving 100 million degrees. Up to now, the most that has been achieved is a temperature of 600 million degrees in Princeton, in the United States. Heating is based on electrical resistances and for that reason it is called Ohmic heating. The Tokamak system is the one most used for that purpose although theoreticians take for granted that it will be replaced at a more advanced stage of research.

Brazilian Effort

The scientist reveals that nuclear fusion research in Brazil began late, between 1974 and 1975. At the moment, there are six groups studying the subject located at the University of Campinas (UNICAMP), the Federal University of Rio Grande do Sul, Sao Paulo University, the Space Research Institute, the Aeronautical Technological Institute, and the Fluminense Federal University.

Brazil does not yet have the technology to obtain deuterium although that [technology] can be absorbed rapidly. Obtaining tritium, however, is more difficult, requiring a more advanced stage.

Sakanaka declared, however, that there is great motivation among the Brazilian personnel. The six groups of researchers keep up an active exchange and proof of that is the existence of a national committee to coordinate all activities in the area. The committee will shortly propose to the government the establishment of a National Nuclear Fusion Center. Thereafter, each Brazilian university would have the necessary means to develop new projects, thereby multiplying that activity in the country. "As a result of that initiative, we expect Brazil to become internationally known, especially in the aspect of heating systems." That initial group has been receiving support from the Studies and Projects Financing Fund (FINEP), the National Research Center (CNPq), the National Nuclear Energy Council (CNEN) and the Sao Paulo State Research Aid Foundation (FAPESP).

At UNICAMP, the scientists are working with imported deuterium using the Theta-Pinch apparatus, that is already producing temperatures of 10 million degrees. The apparatus was completely built in Brazil. Another apparatus was purchased with FINEP financing and should go into operation in midyear. Sao Paulo University has another apparatus that recently reached 2 million degrees in initial tests.

"Since it is a new subject, we have to study the physics of heating. With that, we will be achieving higher temperatures. At the same time, we will be adopting new methods of research, including the building of apparatus that does not exist on the market. There is also the question of confinement. For example, plasma, which is a gas, has a tendency to escape. Thus, we are also studying the stability of plasma and we expect to achieve concrete results in 1985.

A survey indicates that there are only 20 researchers in Brazil working on nuclear fusion. During the last 5 years, 30 million cruzeiros were spent, which comes to an average of 6 million cruzeiros per year. In the meantime, the United States, Western Europe, Japan and Russia each spend $500 million per year. China spends $200 million per year. Including doctors and engineers, the United States has 2,000 researchers, with the same number estimated for the Soviet Union. Europe also has 2,000 researchers and China has 5,000. In the rest of the world there are 500 more researchers, including the 20 Brazilian scientists.

Prof Paulo Sakanaka

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FIRST ANTI-ANGRA NUCLEAR PLANT DEMONSTRATION BEING STAGED

Rio de Janeiro O GLOBO in Portuguese 18 Jan 80 p 7

[Text] A caravan of cyclists left Cinelandia for Angra dos Reis to participate there tomorrow in the first demonstration to be staged in that city against the construction of the Itaorna Beach atomic plant.

The demonstration will bring together ecologists and people concerned about the preservation of the environment and coincides with the 10th anniversary of the beginning of the plant project. Groups of youths and people sympathetic to the movement are preparing a reception for the cyclists in front of Carmo Convent, built in 1593, the oldest building in the municipality.

In the neighboring city of Parati, a caravan is also being organized to participate in the demonstration. Although Angra has become the center of discussion by ecologists, economists and politicians all over the country, until now there has not been any collective demonstration in the municipality against the Brazilian nuclear program, which plans to install three atomic plants there. Earlier, there have been individual protests, such as that of singer Ivan Lins, who spoke out agains the atomic plants during a show at the Aquidaba Yacht Club. Parati amateur theater groups wrote and staged the play "Itaorna, Poor Rock," in which they protested against the ecological threat represented by the project installed in the neighboring city.

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GERMAN PARTNERS EXPECT TO FIND PLENTIFUL URANIUM

Rio de Janeiro JORNAL DO BRASIL in Portuguese 20 Jan 80 p 30

[Text] Bonn--Although the results of 3 years of exploration have not been very positive, the German partners in NUCLAN, the subsidairy of the Brazilian Nuclear Corporation (NUCLEBRAS) that is looking for uranium in Brazil--remain optimistic and believe they are still going to find a plentiful quantity of that strategic mineral in Brazil. Thus far, NUCLAN has found only 10,000 tons of uranium, compared to the 205,000 NUCLEBRAS said it found in the same period of time.

Extremely cautions, the Germans show that they are only concerned about the negative repercussions of the nuclear agreement in the Brazilian press, and for that reason ask not to be identified. Various German informants have already been taken to task by NUCLEBRAS after giving statements to Brazilian reporters.

German Optimism

The reason for the German optimism is simple: a short time ago, NUCLAN (and through it, the German Urangesselschaft Company, which holds 49 percent of the stock of the NUCLEBRAS subsidiary) received new prospecting areas. The company's geologists are now working in Paraiba, Bahia, Goias and Pernambuco, concluding intensive discussions with Brazilian officials that lasted more than 2 years.

Up to 1978 the justification presented by NUCLAN for the lack of positive findings was the small area and the low-quality of the areas of interest that had been assigned to it by NUCLEBRAS. Speaking off the record, naturally, German geologists from Urangesellschaft had already said some time ago that NUCLBRAS had kept the best part of the cake to itself, leaving the rest to NUCLAN.

At the present time, said one of the German company's geologists, there is no longer reason to complain about NUCLEBRAS. In the new areas, especially in Goias, where the Germans are employing geological know-how acquired in terrain having a similar formation in Canada (a country with enormous

enormous uranium reserves, the first investigations in the area seem to be very promising.

"I do not have the slightest intention of minimizing NUCLEBRAS' merit," said the German geologist, but the recent discoveries in Minas Gerais which considerably increased Brazilian uranium reserves, are the result also of the cooperation and the transfer of geological know-how we developed in the northeastern region of the country.

The explanation the Germans give for the success of NUCLEBRAS in the search for uranium and their own failure is quite simple. In the first place, NUCLEBRAS has a budget at least eight times larger solely for uranium exploration, said one German technician. In the second place, the geologist continued, there is a ratio of 10 NUCLEBRAS geologists to each NUCLAN geologist working directly on exploration.

"I do not believe the statement that we started looking for uranium in Brazil at the same time as NUCLEBRAS ia a fair one," said the same German geologist. "As a matter of fact, NUCLEBRAS already had know-how accumulated even before the signing of the agreement between Brazil and Germany, whereas, we were the ones who had to begin everything at square zero."

The discussion regarding granting NUCLAN new (and wider) areas for investigation, according to a German source, must be attributed to "the problem of rivalry" between NUCLEBRAS itself and NUCLAN. "It may appear paradoxical," said a German geologist, "but the fact is that the two firms were carrying out the same type of activity--uranium prospecting--and were in a competitive situation. That was the reason for those original difficulties, which have already been overcome." Jokingly, the same German geologist said, "Now NUCLEBRAS is so pleased with itself over the recent stupendous discoveries that it no longer minds granting us some additional areas."

As far as the Germans are concerned, the central question remains, of course, the supply of uranium for their domestic sectors. Although Brazil has been officially declared by Urangesellschaft as one of the four principle centers of gravity of the company's prospecting activity in the whole world (after Austrialia, the United States, and Canada), there is not really much urgency in accelerating discoveries in South America.

"There is no doubt that the world need for uranium, and in Germany as well, is today much less than was thought a decade ago," said a German source. "That fact also caused the price of uranium in the world spot market to drop $2 to $4 per pound last year, which is really very unusual."

Accustomed to thinking in terms of long periods of time--from prospecting to the operation of a uranium mine can take more than 10 years--the Germans view Brazil as one of the long-term projects which would only be considered as a large supplier of uranium to German in the not yet well determined future. "One thing is certain," asserted the German geologist, "we would not invest 15 percent of our budget in Brazil if we did not consider it as an option for supplying uranium to our reactors.

At the present time, part of the first-level personnel, in terms of quality, which Urangesellschaft dispatched to Brazil 3 years ago, when it began its activity in South America, continues to work at the sites designated by NUCLEBRAS. Some have already married Brazilian women. NUCLAN is now taking advantage of the situation to send Brazilian geologists abroad, mainly to Australia and Canada, and a group has aleady competed its apprenticeship abroad in areas of interest to Urangesellschaft.

Unlike other entrepreneurs in the nuclear sector, those responsible for uranium prospecting can up to a certain point enjoy the luxury of ignoring the protest movements against atomic energy that have been organized in the last 3 years in various countries, especially in Germany. However, Urangesellschaft became the target of a bomb attack perpetrated against its headquarters in Frankfurt last year, "but our units of time are so long that we can really face all of that post-Harrisburg agitation very calmly," said a geologist from the German firm.

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CSO: 5100

INDUSTRIALIST WORKS TO FORM COMMITTEE FOR NUCLEAR PLEBISCITE

Copenhagen BERLINGSKE AFTEN in Danish 4 Jan 80 p 3

[Article by Rolf Bagger: "Before the National Referendum on Nuclear Power in Denmark. The Proponents Are About To Get Together"]

[Text] In recent months a group of people who believe that Denmark must not reject the possibility for building nuclear power stations here in this country have held a series of informal meetings, to, if possible, set up a committee. Common for them is the concern over the development which the nuclear power debate has taken in recent years. But so far the work with the formation of the committee is surrounded by strong discretion.

Energy

At the moment considerable efforts are being exerted to set up a committee which with emphasis can participate in the energy debate and speak for a Danish energy policy, which also includes nuclear power stations. The work is surrounded by considerable discretion, but it is clear that prominent people from the Industry Council are participating.

Assistant Director in the Industry Council, Christian Einfeldt is thus the practical coordinator in the work, but he emphasizes to WEEKENDAVISEN that he does not do it on behalf of the council, but as a private person. The Director of the Industry Council Ove Munch says that he as a private person has participated in some meetings, but that as director in the Industry Council he has mostly appeared as host since some of the groups' meetings have been held in the Industry Council's building since they have available suitable premises, but that meetings have also been held elsewhere.

However, the initiative does not come from the Industry Council but has appeared among several different people simultaneously, and this is being emphasized by everybody whom WEEKENDAVISEN has talked to. Beyond a fixed core, the circle has no fixed composition. It presumably consists of writers, researchers and business people and many others.

"I can say," says Ove Munch, "that in this circle we have the idea that we are lacking a counterbalance to the very strong effort which is being made by the nuclear power opponents. The discussion group is a group of people who are interested in the energy debate and who for some months have discussed the development which the energy debate has gotten into with very strong marketing of a campaign of fear for the part of the energy supply which is called nuclear energy."

The chairman of the Industry Council, Director Erik B. Rasmussen, says: "Many have felt that what has taken place so far has been a very distorted debate, and then the industry, the Industry Council and other organizations and a number of individual persons have at the same time felt that it is necessary to do something."

A Couple of Months

The meeting activity has been going on for a couple of months, and a a meeting on 17 December, the date of 25 January was mentioned as a possible time for presenting the committee to the public.

"It cannot be done by 25 January," says Assistant Director Christian Einfeldt, the Industry Council. "What takes place at the moment is that this discussion group is holding some meetings where one discusses the work structure and names of people, and it is correct that I have the practical coordination which calls for meetings and things like that, but whether it will be a committee or some other form of coordination organization has not yet been decided."

A rumor shortly before Christmas said that the committee planned to set itself up with former family minister and the present mayor in Abenra, Camma Larsen-Ledet, as chairman with, for one thing, SID's newly elected chairman Hardy Hansen and the chairman of Dansk Metal, George Poulsen, as members and also with former general secretary of the National Church Emergency Assistance, Pastor Viggo Mollerup, as general secretary.

Eja Elbek from the National Association Real Energy Information REO confirms that all these names have been mentioned in some of the meetings which REO has participated in, but only as possibilities among many others, and without the people involved participating in the meetings.

"We have been asked to come and talk at some meetings where people have informed each other about where they stood," says Eja Elbek, who just like everybody else who was asked refers to Assistant Director Einfeldt.

Camma Larsen-Ledet emphasizes that she has not participated in any meetings, but she confirms that she was asked whether she was willing to join the committee.

"This was an unofficial approach," says Camma Larsen-Ledet, "and I have reported that I say no. I don't wish to say anything in the case, and I have not participated in any meetings."

"I have known that there were some people who were involved in this," says Association Chairman George Poulsen, "but I have had no official request at all, and I have not participated in anything at all of that kind, and neither do I intend to get into anything."

Association Chairman Hardy Hansen could not be found.

Before the National Referendum

The former general secretary of the People's Church Emergency Assistance, Pastor Viggo Mollerup, says that he has participated in a single meeting in what he calls "the committee being formed" in a group where he did not know everybody who was present. To the question about whether he was asked if he possibly would say yes to a job as a general secretary for the committee, he answers: "Who should ask me? Before one has a committee and has organized with a chairman, one cannot talk about a general secretary either. But in a brainstorming it is quite possible that my name may have been mentioned once; I don't know."

About his own motives for participating in possible committee work, Viggo Mollerup says:

"Denmark is one of the countries which are most vulnerable in the entire energy problem. Socially I have been extremely concerned with the energy problem because an energy shortage would strike a highly developed society like the Danish society extremely hard. I am therefore very concerned that through a national referendum we may possibly be cutting ourselves off from using nuclear power. I believe the doors must stand open for nuclear power too. Comprehensive information work will therefore be very important."

So far everybody has chosen to be silent with regards to names in the discussion group. "I neither can nor must nor will say anything about it," says lecturer Uffe Korsbech, who in line with Professor P. L. Olgaard refers to Assistant Director Chr. Einfeldt.

Chr. Einfeldt says: "I do not want to be unfriendly, but I feel that I serve this case best by letting the work proceed in peace and quiet until we are ready and can step out. It will not last very long. The more public debate, the more difficult it will be, because some people will retreat and not participate if there is too much public discussion first."

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COMMUNISTS CALL FOR MORE AMBITIOUS NUCLEAR POWER POLICY

Paris CAHIERS DU COMMUNISME in French Jan 80 pp 60-69

[Statement by PCF federation of Calvados, released in Caen by the Calvados federal bureau on 26 November 1979: "Campaign To Meet Our Energy Needs and Establish National and Democratic Control of Nuclear Power"]

[Text] The issue of nuclear power plants and the question of peaceful use of nuclear energy are the subject of an intense political and ideological battle in the department of Calvados.

The French Communist Party (PCF), its Calvados federation, and its members have entered this debate with a twofold purpose in mind: to base their thinking and their action on the interests of the working class, the manual and intellectual workers, and to defend France's national interest.

In fact, solution of the great problems confronting our country critically depends on the workers contribution. The ability of the working class to resolve new and complex problems is one dimension of the leadership role it plays in the struggle to change society.

As the working class and workers party, the PCF formulates an original concept based upon its class positions and its grasp of the national interest. It proposes solutions conducive to the use of nuclear power for the good of the workers and the nation.

No to Energy Rationing

We are fighting to ensure that the material and intellectual needs of workers are satisfied. These needs correspond to the necessities and capabilities of our times and can only be satisfied with increased power production. Hence the generation of power is itself an essential social need.

But we are far from meeting energy needs in our country. France is not one of the leading energy consuming countries. It ranks 13th in Europe in electric-power generation, and while average per capita consumption in Europe is 5.1 tons coal equivalent (TEC), France consumes only 4.76 TEC per year. Furthermore, there are flagrant inequalities between the energy consumption of the more privileged classes and that of the majority of workers.

To justify this situation, it is good form to refer to the "energy crisis." We shall now answer the following question: Is there an energy crisis?

If by "crisis" we mean that there is a physical shortage, that mineral raw materials and sources of energy are liable to be lacking, the answer is "no." Resources are substantial, even though imperialism is plundering and wasting them and has shown itself incapable of managing them properly and using them rationally. Moreover, the amount of resources already found and the possibilities of discovering new ones closely depend on the exploration effort, an effort capitalists are not making out of fear of seeing their profits diminish.

Nevertheless, there truly is an energy crisis. Obviously it is not the cause of the crisis in society. Today, people realize much more clearly just how right the communists were back in 1972 when they rejected the idea that the rising production price of oil was the cause of inflation and the widespread increase in all prices. Nor is the energy crisis a "separate" crisis. There are some persons who refer to a set of compartmented crises such as the energy crisis, environmental crisis, cultural crisis, etc. in an effort to better deny society's structural and comprehensive crisis.

The energy crisis is one component of that comprehensive crisis. It has the same basic characteristics and same causes as the latter: the contradiction between the technical means of coping with the growing needs of workers and society on the one hand, and the lust for profits of the large capitalist interests and the policy of the government serving them on the other.

Everything is being done to increase the profits of the large corporations. The government closed the coal mines, and the national output dropped from 59 million tons in 1960 to 23 million tons in 1978. The government anticipates a further drop to 15 million tons by 1985. The European orientations, supported by the Socialist Party and the right, call for accelerating this decline and favoring West German coal. After having promoted an "all-oil policy" which benefited only the "big wheels" of the international oil cartel, the government is now moving towards an "all-nuclear policy" whose sole objective is to enrich the atomic trusts, primarily the American trusts. France's energy balance has worsened considerably:

national production supplied 53.3 percent of national consumption in 1960, whereas it supplied only 25.5 percent in 1978.

On the other hand, for the working class the situation is one of austerity and rationing. The reduction of consumption by the working masses is deliberately organized. A type of de facto rationing is already in effect: rationing through money with the increased price of energy, and rationing through the setting of quotas for individuals and for communes, and departments. The blackout of 19 December 1978 showed that we are threatened with electric power outages.

The government's policy is in keeping with imperialism's overall objective of maintaining dominating relations vis-a-vis the peoples of the world. That is why imperialism is being countered by the determination of all those peoples fighting for their political and economic independence, including most of the oil producing countries. The latter intend to use their resources to finance their own industrialization. Consequently they are combating the disparities in trade conditions: the increase in oil prices since 1974 has not kept pace with worldwide inflation or the increase in the price of industrial goods imported by the oil producing countries.

In contrast, the oil trusts are making enormous profits and countries are levying extremely high taxes on petroleum products. For instance, such taxes account for approximately two-thirds of the price of gasoline. This proves that producing countries could sell their crude oil at a remunerative price without having this mean rocketing prices for the consumer.

Government policy is exacerbating the energy muddle. This muddle is the result, for example, of capitalist urbanization which locates residences far from places of employment, insufficient public services and facilities, particularly in the field of transportation, regional development disparities, the accelerated obsolescence of plants, the dismantlement and underutilization of factories and machinery, overinvestment, reduced service life of manufactured goods, pollution, the capitalist system's inability to grapple with the problem of retraining personnel to readapt them to industrial and scientific advances, etc.

In a nutshell, if there is a shortage of energy and if energy is expensive for the small consumer, this is not because of some external fatalistic influence. It is the consequence of a course of action designed to satisfactorily serve the interests of the large financial and industrial corporations, and solely for that reason.

No to Giscard d'Estaing's Nuclear Power Policy

This is the context in which the Giscardian government formulates its nuclear power policy, a policy that is a "sellout" of France's national interest and independence, a policy limiting the national innovation and investment effort and thereby causing economic activity to decline and the nation's economic fabric to disintegrate.

After having abandoned the power reactor process developed in our country by the Atomic Energy Commission (CEA), the government ordered a halt or slowdown in the most advanced research projects and began dismantling that public agency.

The selection of an American power reactor process, under a Westinghouse license, was coupled with total submission to a few supranational industrial groups: Empain-Schneider for reactor construction, and Peychiney-Ugine-Kuhlmann (PUK) for the fuel cycle. These firms are pillaging France by raising their prices in an accelerated and unwarranted manner, and without any quid pro quo. From 1973 to 1979, the price of nuclear power plants tripled, that of the fuel cycle quadrupled, and that of uranium ore increased sevenfold, while the general price index rose from 100 to 180 during the same period. This choice of the Westinghouse license was all the more expensive because that power reactor process requires enriched uranium.

As for the Super Phenix breeder reactor, it is being built by a private international company in which the EDF [French Electric Power Company] became a majority stockholder only because of a militant campaign to that effect.

We must emphasize that all of these surrenders are not peculiar to the nuclear power industry. They also characterize many key sectors of the French economy. The relocation policy has also adversely affected research activity, and particularly high energy physics research. The necessity of an "opening onto the world market" is really merely a pretext for justifying abandonment or nondevelopment of the economic, scientific, and technological bases of national independence. The experience of the nuclear industry clearly shows how harmful to France are those decisions made on the basis of possible "slots" for basically French multinational corporations, and not on the basis of the realities and necessities of our country's development.

Added to these developments is the Brussels Commission's current intentions to intervene directly in all of France's affairs related to nuclear power. The accelerated European integration advocated by the government and social-democratic elements is fraught with the possibility of a scale-up of all the pernicious aspects of Giscardian policy.

Because it removes France's control over this key sector, the government's policy is an antidemocratic policy. This policy is dictatorially determined in a centralized and technocratic manner within the secrecy of joint staff meetings of the top level executives of major corporations and their political agents. It is implemented by equally secret technocratic procedures and presented to the country as an accomplished fact. At no level are the nation's elected representatives allowed to discuss that policy's orientation or implementation, except possibly in camouflaged pseudodebates of no practical consequence. On the other hand, key decision-making and control centers are increasingly located in foreign countries and in the management offices of multinational corporations.

Government policy entails dangers to national security because it is contrary to the national interest and determined in an antidemocratic manner. Foreign domination and the dismantlement of the national potential interferes with complete control by French scientists and technicians over the power reactor process and its practical application. Authoritarian and technocratic orientation is opposed to pluralistic debate as well as to allowing workers of the nuclear power industry and the population as a whole to have their say and thus acquire a better understanding and control of the effective tool this industry constitutes.

For a National Energy Policy

France must, therefore, have another energy policy a policy that is not determined by the profit motives of large corporations but based on the use of all national resources and their coordination with a view to meeting the country's needs. France must have an energy policy that is both national and democratic.

Contrary to what the government claims, France does not lack energy resources. Several tens of billions of tons of coal lie dormant under our feet. Modern liquefaction and gasification processes coupled with the use of automation make it possible to exploit these deposits both as a source of energy and as raw materials for the chemical industry.

Revival of coal mining operations would help us cover more of our energy supply requirements from national resources. Although there are still numerous sites suitable for hydroelectric power plants, the government has halted equipping the country with such facilities. Resumption of hydroelectric power plant construction would particularly help solve many local electricity consumption problems. It is also necessary to expedite studies and complete the Mont Saint Michel Bay tidal power station.

It is necessary to intensify research and development of what are generally called "new sources of energy" that are likely to play a relatively significant role in satisfying a certain number of needs even at the present time. These "new sources" include solar energy, wind power, geothermal power, biomass, solid wastes, oil shale, etc. Contrary to prevailing opinion, these sources of energy are by no means small-scale sources. However, they do require an extremely advanced and sophisticated technology. For that reason, it is vital that research be furnished all of the necessary resources, contrary to what the government is doing. The latter is demagogically babbling about these "new sources of energy" while actually curbing research. If the government does not reorient its policy, then American and Japanese industrial groups will essentially monopolize the application of these techniques.

As for our national oil requirements, they can be covered if our country takes militant measures against the oil cartel's trusts and moves toward a new type of relations, free of any sequelae of neocolonialism, with Third World countries. Communists are fighting for a new world economic order giving due consideration to the industrialization needs of developing countries and involving new relations with raw materials producing countries on the basis of equality and reciprocity. France has great capabilities in this regard and a large following in Third World countries. Hence it could in this way ensure itself reliable supply of oil. The latter depends, therefore, on a change in our country's foreign policy.

This diversified use of all sources of energy obviously includes the use of nuclear power. France's history and its scientific and industrial capabilities constitute first-rate assets enabling France to calmly develop current and future processes for the use of nuclear power. This development presupposes a reorientation of policy: this material and human potential must not be downgraded, but must be reinforced and consolidated.

All of these proposals contradict government policy on each point. Their adoption would permit reversing that policy's present course and would gradually ensure supplying more than half of French consumption with nationally generated power. By 1985, this coverage could be 37.5 percent. It could reach 46.6 percent in 1990 and 64.5 percent by the year 2000, and this even with the prospect of a rate of economic growth permitting requirements to be met.

Under this policy, an effective campaign could be conducted against the real waste of energy. Energy savings can be achieved by reexamining the design and construction of plants and buildings, and by expanding public and community services and facilities. This means that real savings are not made by exerting pressure on popular consumption but by the effective participation of workers in the management of enterprises and in decision-making on capital investments. Such savings, therefore, presuppose democratization of the nation's economic and political life at all decision-making levels.

Unequivocal Position on Nuclear Powers

As far as nuclear power is concerned, the PCF's position is clearly stated without equivocation. The party formulates its views and policy in a serious manner and with a sense of responsibility, solely on the basis of the interests of our people and our country, and by making its decisions free from any pressure from the government or supporters of class collaboration.

Communists consider nuclear power necessary to society. They hold that its development is in keeping with scientific and technological progress. They propose adoption of an ambitious nuclear power policy that is in no way opposed to the use of other forms of energy.

As supporters of the peaceful use of nuclear energy we are not thereby insensitive to the safety concerns expressed by environmentalists. There are still problems to be resolved, as is natural with a new and highly evolving technology. Yet this does not mean that nuclear power is dangerous. It is even less dangerous than most other industrial sectors--construction, chemical, mining, steel, etc--where working condition are such as to jeopardize a worker's life and health continuously.

Nor can we make our decisions in the abstract by ignoring the concrete situation produced by the government. We are not the ones who chose to abandon the CEA's gas-cooled, graphite-moderated power reactor process. We are not the ones who decided to skip stages in developing breeder reactors. The government did these things. Faced with a situation for which the government alone is to blame, we consider it our duty to have the courage of our convictions and reject the easy (and ineffective) way out of demagoguery and an ostrichlike approach.

We are combating the policy pursued by a government that is engaged in a rigged debate with the diehard opponents of nuclear power in an effort to mask the real stakes involved, namely national independence, reliable sources of supply, and satisfaction of our energy requirements. We oppose that nihilism which tends to justify the crisis and Giscard's austerity policy. We likewise expose the double-dealing designed to satisfy everyone while refusing to conduct a frontal attack on the real problems and those persons really to blame.

Such is the case with the "moratorium," that is to say the halting of all nuclear power plant construction pending the resolution of all problems. This is a pretext used by those who do not want to be seen as openly opposing nuclear power development. It should be realized that the government previously established a "moratorium" from 1966 to 1970 and it was under the cover of this moratorium that it abandoned the national power reactor process. A new moratorium today could only be a tactic designed to allow the United States to catch up with France and gain full access to the knowledge and expertise we have. This would thus further aggravate France's decline and its subjection to foreign interests. In addition, a moratorium would adversely affect research activity, including research on nuclear safety, for it must be realized that research is conducted not only in laboratories, but equally by studying actual production conditions.

The Socialist Party supports the moratorium. It also favors holding a referendum, as if the nuclear control issue could be resolved by a question which voters answer with a simple "yes" or "no." The Socialist Party also rides with the relentless opponents of nuclear power and, at the same time, has the insolence to say it defends the CEA. The Socialist Party's position on nuclear power is indeed a beautiful example of doubletalk or "multiple talk."

Communists are for the development and national control of nuclear power. Such control demands that we fight against domination by trusts and for our country's guaranteed independence and sovereignty. For instance, the license agreement with Westinghouse will expire in 1982. We, therefore, recommend "Frenchification" of that power reactor process, in other words, having our researchers and technicians appropriate it and modify it in the light of our own requirements. This would enable France to free itself from Westinghouse domination and American leadership.

It is absolutely necessary to establish a strong national base for the use of nuclear energy. That is why we recommend strengthening the CEA and EDF, along with democratic nationalization of the nuclear power industry, the reactor and fuel industry, particularly the nationalization of Empain-Schneider, PUK, and their nuclear power subsidiaries.

As for our uranium ore supplies, it is necessary to intensify the prospecting effort in France proper while also reconsidering our relations with Third World countries so as to cease looting their natural resources.

National control will enable France to assume more effective responsibility for safety problems. Even though the nuclear power industry is a "clean" industry, its specificity and characteristic complex problems have to be taken into consideration. The principle problems will be solved at the power plant design stage. This presupposes that scientists and engineers have the necessary time and material resources. This concern and the need to take all appropriate safety measures are at variance with the notion of strict economy of plant operation and profit. The nuclear power industry must be freed from capitalist monopolies.

But safety is also a matter for democracy. The recent incident of cracks found in some reactor vessels is quite revealing in this respect. It shows that the active and democratic intervention by workers of the nuclear power industry is an effective safety factor. Expansion of "self-management" [greater decentralization and workers' voice in government and industry] will thus provide additional equipment safety guarantees.

Two major principles run through these proposals like a red thread.

First of all, nuclear power requires greatly enhanced democracy and "self-management." Elected representatives must of necessity play their part at the national level in determining the country's policy and at the local level in implementing that policy, in helping solve the problems of plant sites, environmental impact, safety, etc. Generally speaking, information, discussion, and coordination are the components of a good nuclear power policy. All secrecy in such matters must cease. Workers in the nuclear power industry must have new labor-union freedoms and rights. They must be able to participate in their firm's management. Shop and plant workers' committees must be formed, enabling them to intervene at all times in matters relating to power plant safety, operations, and working conditions.

Secondly, it is necessary to expand facilities for basic and applied research (accelerators, etc) so as to better understand and control the energy contained in the nuclear material, to use it more efficiently and safely, to develop new processes and systems for the medium term (high-temperature reactors, magnetohydrodynamic conversion, etc.), and to harness thermonuclear fusion for the future. The use of nuclear energy is only in its beginnings. It offers great prospects as a means of meeting the country's energy needs, in independence and democracy, and with guaranteed safety.

For Development of the Normandy Region

"Live, work, study, and make decisions in Normandy" is a watchword that expresses a desire largely shared by the workers of our region. That desire has taken on a new dimension with the demand for a different, freer, and happier life. Contrary to certain popular ideas, this does not mean a return to a long-gone bucolic past, but on the contrary, a broad development of all of Normandy's industrial, agricultural, and maritime potentialities, and full utilization of its material and human resources and capacities, as called for in our party's regional platform of 19 May 1979.

France's electric power production suffers from an imbalance unfavorable to the country's western regions. This imbalance is not only a factor weakening the very fabric of the region, but it is also expensive because of power transmission costs and the magnitude of power losses occurring in transmission. It is necessary, therefore, to put an end to this imbalance.

Development of nuclear power is one means of doing this. Nuclear power plants are under construction in Paluel and Panly (Seine Maritime), as well as in Flamanville (Manche). Communists support the building of these plants. Moreover, if meeting national or regional power needs require construction of a plant in the department of Calvados, at Englesqueville or elsewhere, we support an expeditious program for informing and consulting with the populations concerned and their elected representatives for the purpose of resolving all problems relative to site selection, living conditions in the area, environmental impact, safety, effects on the economy and everyday life (why not, for example, use the hot water discharged from the power plant for urban heating?).

This stance in favor of nuclear power does not preclude the regional use of other sources of energy. Two gas turbines are to be installed in Balinville-sur-Orme. Communists who campaigned for this project consider this an important achievement, a success obtained over the protests of certain reactionary elected officials. The same applies to the coal-burning steam plant in Le Havre. We are also militantly supporting completion of the Mont Saint Michel Bay tidal power station.

Construction of power plants makes it necessary to solve the power transmission issue. High-voltage transmission lines are indispensable. Their location must take into consideration the views of local elected officials and the population. It must also preserve where necessary the character of picturesque natural sites.

In addition, we recommend formation of a democratically based regional nuclear safety and information commission that would take cognizance of the opinions of workers, elected officials, communities associations, and the entire population. This commission would disseminate necessary information and have the technical support of decentralized agencies responsible for nuclear safety and radiation protection.

Nuclear power development necessitates the reprocessing of nuclear waste both for safety reasons and for supplying fuel to power plants, particularly to breeder reactors. The facility in La Hague was designed for this purpose. The nuclear power boom requires that the facility be expanded and that research on the reprocessing of irradiated reactor fuel be intensified.

It is essential, however, that the La Hague plant- detached from the CEA and now belonging to a private subsidiary, COGEMA--revert to being a state-owned facility once again. The responsibility involved in handling nuclear waste cannot be reconciled with profit and output motives and standards. Workers at the La Hague facility and their labor unions must be able to have the time and freedom necessary to perform their duties under the best safety conditions. Lastly, if the facility has the capacity, we see no objection to having it reprocess waste from foreign countries--for we support international cooperation and trade--provided, however, that the facility is not used as a storage site for such waste for an unlimited period of time. For the transporting of this waste it is advisable to make maximum use of railroads. That is why, jointly with our comrades of the department of Manche, we recommend opening a direct rail line from Couville to La Hague.

Nuclear power has become a dimension of Normandy's regional reality. In addition to the nuclear power plants, the La Hague fuel reprocessing plant, a large national heavy ions accelerator (GANIL) is being built in Caen. This devise will give new impetus, even on the international level, to particle physics and to extensive and theoretical knowledge of subnuclear realities. It will also open the way for unsuspected possibilities in the use and transformation of nature.

Normany thus has a new regional vocation. It has become a major scientific research and production center in this advanced technology field. This new characteristic can and will be fruitful to regional development, providing Normandy uses all of its assets.

We are demanding a more coherent and coordinated development effort for the present and the future. Production and research must be coupled with training programs for positions in the nuclear power industry at all levels. Applied research must also be present. Around this research, it will be possible to develop advanced technology industries linked to nuclear power requirements. Other applications of radioelements in medicine, public works, or in agronomy, for example, can find opportunities and markets.

And above all, it is even more urgent to campaign militantly for a true democratic regional government, a decision-making authority for Normandy's economic, social, and cultural development, with particularly a regional assembly elected by universal, direct, and proportional suffrage, and having the financial resources needed to carry out its responsibilities.

Yes to Progress and to the Future

Nuclear power is the center of an intense battle of ideas. To justify their opposition, some critics try to incite unwarranted fears. For example, they compare nuclear power plants to bombs. That is purely and simply ridiculous. Or else they place unilateral and deliberately exaggerated emphasis on the "risks" involved. By using the nuclear theme, they try to develop a catastrophic and irrational ideology, to spread panicky fear of the year 2000. Claiming that "to live a happier life" it is necessary to produce less power," they show themselves for what they really are, namely poets of austerity justifying, by their continuous reference to the holocaust, Giscard d'Estaing's policy of scarcity, and trying to obliterate any optimistic perspective so that our workers and our youth will take a defeatist attitude of resignation toward current difficulties, of skepticism about change, and of renunciation of the struggle.

At the same time, they are attempting to turn the people's discontent onto fallacious targets. They are waging war against large-sized "tools," as if the size of factories and techniques was the cause of exploitation! They are denouncing the centralizing, repressive, and oppresive character per se of nuclear power, as if employers and the government had waited for the existence of that technology to expand centralization, oppression, and authoritarianism, primarily against the workers movement!

These ideas are thus playing the government's game and we must not choose the wrong target. The workers' enemies are not nuclear power or science, but the government and big capital. Communists are resolutely shedding light on this issue. They are not blaming science for the human, economic, and ecological havoc wreaked by capitalism.

These themes are part of a vast campaign designed to involve, all together, science and progress, reason and hope. Such ideas have become anathema to capitalism. For the latter, the problem is one of reducing the workers to despair so that they will cease fighting for a different society, for "self-management" socialism in France's colors. This campaign is an integral part of the efforts being made by the ruling bourgeoisie and social democratic elements to orchestrate a consensus in support of capitalism's policies and domination.

We are fighting against class collaboration and to extricate France from its crisis. We will not yield to the opposition's pressure tactics. We clearly affirm that because we really want socialism, we do favor economic growth, a new growth based on the satisfaction of individual and group needs, democracy, scientific progress and innovation. Justified criticism of blind "productivism" cannot in any case result in rejection of growth itself.

Because we are actually fighting for socialism, we declare ourselves to be for science and progress, for knowledge and reason. We affirm that it is possible for men to control their relationships with nature and build a new society. The working class is the custodian of all these values today, values opposed by a receding bourgeoisie.

The future will not be built on nothingness or upon ruins. The proposals we are making are not for tomorrow or for better days. The future begins now in militant campaigns in all fields of activity. Right now the people's militant campaigns can effectively influence necessary capital spending and energy-related services and facilities in order to solve today's problems and prepare for the future. These campaigns can enable workers and the masses to gain in all fields, including the nuclear power field, democratic positions helping them create in their lives those conditions conducive to change.

In our view, the battle for nuclear power is in keeping with a humanistic and transformative political perspective. The watchwords put forth by communists constitute immediate objectives for militant campaigns. We call upon manual and intellectual workers to avail themselves of these watchwords and thereby make gains and obtain success in their campaigns.

There is nothing fatalistic about the crisis and France's decline. Militant campaigns are the way to reverse the course of events.

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GOESGEN NUCLEAR POWERPLANT CONSIDERED INDISPENSABLE

Geneva JOURNAL DE GENEVE in French 24/25 Dec 79 p 11

[Article by Anne-Marie Ley: "The Goesgen Nuclear Powerplant Will Already Be Indispensable This Winter"]

[Text] The Goesgen nuclear powerplant received the final green light from the federal authorities on 19 November. Its average production of 6 billion kW per hour is practically equivalent to the three powerplants of Muhleberg, Beznau I, and Beznau II combined. The share of electricity produced by these four powerplants will represent about 30 percent of the total Swiss electricity production. The other 70 percent is essentially produced by hydroelectric generators and the Chavalon fuel oil thermal powerplant (2 percent).

"Putting the largest Swiss nuclear installation (920 mW net electric power) into operation should not encourage energy wasting," stated Mr Michael Kohn during a press conference at Goesgen. Mr Kohn is president of the administrative council of KKG (Goesgen-Daeniken SA Nuclear Powerplant) and ATEL (Aare and Ticino Electricity), and is, moreover, president of the Federal Energy Commission. "It's a matter of seriously using economy measures and of building only enough powerplants to guarantee our country's energy supply," stresses Mr Kohn. "Electricity consumption never stops increasing because of the natural growth of requirements for ordinary uses such as electric appliances, color television, and high fidelity systems. On the other hand," he insists, "one of the postulates of the overall energy concept is that it is appropriate to endeavor to replace petroleum products by developing other energy sources, such as natural gas, coal, solar energy, but also nuclear energy."

For his part, Mr Ernst Trumpy, president of ATEL's board, used numbers to show the constant increase in electricity demand. For the first six months of 1979, the increase in Swiss consumption reached 4.2 percent, and the Federal Energy Office predicts a 5 percent increase in demand on a national scale for the six months of the 1979-80 winter. "Already, this demand could not be filled without the Goesgen nuclear powerplant. If the weather remained relatively mild, and the hydroelectric powerplant output within the norm, the deficit would reach 1.1 billion kW; in case of severe dry cold, so that the hydroelectric output is less, it is estimated that between one-third and one-half of the Goesgen powerplant production will be used to fill our country's needs. The remainder of the output," continued Mr Trumpy, "is for the interconnected networks with foreign countries, to fill in the gaps of existing production, to build up reserves for power interruptions, to effectuate exchanges with other counties, to export the surplus electric current, as well as to use turbine pumping stations in summer to build up the necessary power reserves for the everyday needs of the consumption points at that time."

Fuel Oil Economies

Mr Trumpy emphasized that the Goesgen powerplant also makes its contribution to the national effort to substitute the electricity, steam, or residual heat supply for petroleum. According to him, various analyses have shown that electric heat does not promote an increased number of nuclear powerplants, but it allows the better use of production available during the deep hours of the night. On the other hand, he specifies that electricity is used for heat pumps and industrial applications. He notes on this subject that the Goesgen steam is piped to the Niedergoesgen pasteboard factory, which allows a savings of 70-130 tons of fuel oil per day. The residual heat will be used by the "Plenar" project to supply low temperature heat to Aarau (300,000 population) in the Olten region, which should save 50,000 tons of fuel oil per year.

Mr Kohn also said that the construction work on the powerplant had lasted six years. The KKG (Kernkraft Goesgen) company was established in February, 1973, and the first ground was broken in May of 1973. That was the day of superheated steam and no Swiss supplier showed interest in the Goesgen project. Since foreign contractors had made the best offers, it was finally the German company Kraftwerk Union which carried it off, supplying the turbine and the reactor. Columbus Motor consulting engineers (Baden) was responsible for coordinating the project and overseeing the construction. The first chain reaction took place in January 1979.

The total cost of the installation, including the nuclear fuel and the interest in the uranium processing, reached 2.33 billion francs.

The Price of a KiloWatt

The cost price of energy produced by Goesgen is 6 centimes per kiloWatt hour, including 3.1 centimes for financing, 1 centime for operating costs, and 1.9 centimes for the fuel, the final storage of the radioactive wastes, and the dismantling of the powerplant when it is put out of service. By way of comparison, the kiloWatt price for SH (Eglisau hydroelectric powerplant) with triphase electric current in northeast Switzerland varies between 8 and 9 centimes, and that from the disputed Ilanz I and II hydroelectric powerplants could reach 12 centimes, according to a source close to some opponents.

The powerplant's uranium supply is assured until the 1990's because contracts have been signed with suppliers in the United States, Canada, South Africa, and France. Moreover, the Goesgen powerplant bought a direct interest in the American uranium extraction company, Energy Fuel, which takes care of half the plant's annual needs. For the reprocessing of the irradiated fuel elements, it has signed a 10 year contract with COGEMA [General Company of French Nuclear Matters], a French company at the Hague. Besides, the plant is trying to find a radioactive wastes storage solution, within CEDRA [expansion unknown], which has received a mandate to present a project to the federal authorities by 1985 which can guarantee the final elimination of radioactive wastes. The first requests for authorization to sink them in crystalline form, specifically at Grimsel and under the Swiss Plateau at a depth of 2,000 [m], should be deposited with the Federal Department of Transportation, Communications, and Energy during the current winter.

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